

3.5 Terms of trade (HL)

Learning Outcomes

- Explain the meaning of the terms of trade. (HL)
- Explain how the terms of trade are measured. (HL)
- Distinguish between an improvement and deterioration in the terms of trade. (HL)
- Calculate the terms of trade using the equation: Index of average export prices/index of average import prices \times 100. (HL)
- Explain that the terms of trade may change in the short term due to changes in demand conditions for exports and imports, changes in global supply of key inputs (such as oil), changes in relative inflation rates, and changes in relative exchange rates. (HL)
- Explain that the terms of trade may change in the long term due to changes in world income levels, changes in productivity within the country, and technological developments. (HL)
- Explain how changes in the terms of trade in the long term may result in a global redistribution of income. (HL)
- Examine the effects of changes in the terms of trade on a country's current account, using the concepts of price elasticity of demand for exports and imports. (HL)
- Explain the impacts of short-term fluctuations and long-term deterioration in the terms of trade of economically less developed countries that specialize in primary commodities, using the concepts of price elasticity of demand, supply for primary products, and income elasticity of demand. (HL)

What is the meaning of the terms of trade and how are they measured? (HL)

It is important not to confuse the terms of trade with the balance of trade. The trade balance is determined by the revenue earned from exports and the expenditure on imports. The terms of trade are the average price of exports relative to the average price of imports.

Improvement in the terms of trade occurs when the average price of exports increases relative to the average price of imports. If the average price of exports increases relative to the average price of imports, more imports can be bought with a given quantity of exports.

Deterioration in the terms of trade occurs when the average price of imports increases in relation to the average price of exports. If the average price of imports increases relatively to the average price of exports, fewer imports can be bought with a given quantity of exports.

If Australia's average price of exports increases by 5% relative to the average price of its imports from Singapore then Australia can buy 5% more imported goods from Singapore with the export revenue from a given quantity of its exports. Australia's terms of trade has improved. Singapore, on the other hand, must increase the quantity of exports sold to Australia in order to buy the same quantity of imports from Australia. Singapore's terms of trade have deteriorated.

The terms of trade is expressed as an index. It shows the value of the average export prices, relative to the value of its average import prices. The exported goods and imported goods are weighted. This is to take into account the importance of the contribution each exported good makes to total export revenue and the contribution each imported good makes to the total expenditure on imports. The equation used to calculate the terms of trade is:

The terms of trade = average export prices index/average import prices index \times 100.

Calculate the terms of trade using the data below and state for each year if the terms of trade improved or deteriorated – a step-by-step guide

Year	Index of average export prices	Index of average import prices	Calculation	Terms of trade
1	100	100	$(100/100) \times 100 = 100$	100
2	103	100	$(103/100) \times 100 = 103$	103
3	104	103	$(104/103) \times 100 = 100.97$	100.97
4	109	110	$(109/110) \times 100 = 99.1$	99.1
5	108	107	$(108/107) \times 100 = 101.83$	100.93

Table 79.1

Synonyms

deteriorationweakening/
decline

Trouble shooter

Year 1 is the base year. The index is given a value of 100 therefore the terms of trade = 100.

In year 2 the average price of exports increase and the average price of imports stay the same. The terms of trade increases to 103. A given quantity of exports can now buy 3% more imports than in year 1, therefore the terms of trade has improved.

In year 3 the average price of exports increase again but the relative increase in the average price of imports is greater. The terms of trade falls from 103 to 100.97. The terms of trade has deteriorated in year 3 because a given quantity of exports can buy fewer imports than in year 2.

In year 4, once again, the increase in the average price of imports is relatively greater than the increase in the average price of exports. The terms of trade falls from 100.97 to 99.1. The terms of trade has deteriorated in year 4 because a given quantity of exports can buy fewer imports than in year 3. Note that the same quantity of exports can buy fewer goods in year 4 than in year 1.

In year 5 the average price of exports and the average price of imports fall but the fall in the average price of imports is relatively bigger. The terms of trade increases from 99.1 to 100.93. The terms of trade has improved because a given quantity of exports can buy more imports than in year 4.

Model sentence: If the increase in the average price of exports is relatively greater than the increase in the average price of imports, the terms of trade improves and a given quantity of exports can buy more imports.

Model sentence: If the increase in the average price of imports is relatively greater than the increase in the average price of exports, the terms of trade deteriorates and a given quantity of exports can buy fewer imports.

Explain the short-run causes of a change in the terms of trade (HL)

There are four main short-run causes of changes in the terms of trade. They are explained below.

Explain how a change in the exchange rate affects the terms of trade

A **depreciation of the exchange rate** of a country leads to an increase in the average prices of its imports. For example, if the US dollar depreciates more dollars are needed to buy a given quantity of euros with which to buy imported goods from countries in the Euro-zone. Therefore, the average dollar-price of US imports increase. Buyers of US goods need fewer euros to buy a given quantity of dollars with which to buy US goods but the dollar-price of US exports does not change. US exporters continue to receive the same amount of dollars for their goods therefore the average dollar-price of exports does not change. However, because the dollar-price of imported goods has increased a given quantity of US exports can buy fewer imports therefore America's terms of trade deteriorates.

An **appreciation of the exchange rate** of the dollar against the euro leads to a fall in the average-dollar price of US imports from the Euro-zone. US importers need fewer dollars to buy a given quantity of euros with which to buy European goods. More euros are needed to buy a given quantity of dollars with which to buy US goods but the dollar-price of US exports does not change. US exporters continue to receive the same amount of dollars for their goods. The average dollar-price of US exports does not change but the average dollar-price of US imports falls therefore, a given quantity of US exports can buy more imports and America's terms of trade improves.

Model sentence: A change in the exchange rate changes the average price of imports and therefore changes the terms of trade.

Explain how changes in relative inflation rates affect the terms of trade

If prices in a country increase at a greater rate than in other countries the average prices of its exports will increase, relative to the average prices of its imports leading to an improvement in the terms of trade. A given quantity of the country's exports can buy more imports. However, inflation leads to a fall in the price competitiveness of a country's exports.

Subject vocabulary

depreciation of the exchange rate a fall in the value of a country's currency with respect to a foreign currency

appreciation of the exchange rate an increase in the value of a country's currency with respect to a foreign currency

Explain how changes in the determinants of demand for imports and exports affect the terms of trade

When a **determinant of demand**, such as income and consumer tastes and preferences, changes it causes a change in demand. The demand curve for the exported goods shifts leading to a change in equilibrium price.

Demand for a country's exports increases when income rises in other countries. This causes the average prices of the country's exports to increase, relative to the average prices of its imports. The country can buy more imports with a given quantity of exports leading to an improvement in the terms of trade.

A fall in income in other countries leads to a fall in demand for the country's exports. This causes the average prices of exports to fall, relative to the average prices of imports. The country can buy fewer imports with a given quantity of its exports, leading to deterioration in the terms of trade.

Model sentence: A change in a determinant of demand for exports leads to a change in the price of exports causing a change in the terms of trade.

Explain how changes in the world supply of primary goods affect the terms of trade

A country that supplies oil earns export revenue from selling the oil to other countries. And if it is heavily dependent on oil for its export revenues a change in its price can affect the country's terms of trade. An increase in the world supply of oil leads to a fall in the price of oil. The country can buy fewer imports, with a given quantity of exports leading to deterioration in the terms of trade. If the world supply of oil falls the price of oil increases. The country can buy more imports with a given quantity of exports leading to an improvement in the country's terms of trade.

Explain the long-term causes of a change in the terms of trade (HL)

The long-term causes are changes in income that lead to changes in the patterns of consumption, changes in productivity, and advances in technology.

Explain how changes in income affect the terms of trade of developed countries and less developed countries (LDCs)

An increase in income around the world leads to a change in the patterns of consumption. Increases in income lead to increases in demand for secondary goods and services mainly produced by **developed countries**. Demand for high tech goods and foreign holidays, for example, have a relatively high **income elasticity of demand**. As income increases, demand increases at a greater rate, leading to a relatively large increase in their price.

An increase in income leads to an increase in demand for **primary goods** mainly produced by LDCs. Price increases but income elasticity of demand is relatively low, therefore the increase in price, and the increase in export revenue, is relatively small compared to the increase in demand for, and price of, secondary goods. For an LDC the average import prices of secondary goods increase at a greater rate than the average prices of exported primary goods. The LDC can buy fewer imports with a given quantity of exports, leading to deterioration in the terms of trade. For a developed country, exporting secondary goods and importing primary goods, the terms of trade improve because the average export prices of secondary goods increase at a greater rate than the average prices of imported primary goods.

Model sentence: Increases in world income leads to an improvement in the terms of trade of advanced countries and a deterioration in the terms of trade of LDCs.

Explain how changes in technology and productivity affect the terms of trade

Increases in **productivity** lead to a fall in **average total costs** of production. There are many causes of an increase in productivity, including an increase in the **value of human capital** and the use of more **technologically advanced capital** in production. Increases in productivity in a country lead to a fall in the average price of its exports. *Ceteris paribus*, a given quantity of exports now buys fewer imports leading to deterioration in the terms of trade.

Subject vocabulary

determinant of demand factors that affect quantity demanded at each price

developed countries countries that have relatively high income per head and a relatively high Human Development Index

income elasticity of demand a measure of how quantity demanded responds to a change in income in percentage terms

primary goods a good that has not been processed and is in a raw state (e.g. fruit/wheat)

productivity the quantity of output per unit of input

average total costs equal to total cost divided by quantity of output

value of human capital a measure of the quantity and quality of the skills of the labour force that can be employed to produce goods and services. An increase in the value of human capital leads to an increase in labour productivity.

technologically advanced capital capital that incorporates new technology and is used in place of existing capital to produce goods and services thereby increasing productivity

Subject vocabulary

inflation an increase in the general level of prices of goods/services in an economy over a given time period, usually a year

current account a record of the amount of money flowing out of a country and into the country from the rest of the world from the trade in goods and services, investment income, and transfers in a given period of time?

Explain how the effects of changes in the terms of trade on a country's current account is dependent upon the price elasticity of demand of exports and imports (HL)

See pages 227–37 for a detailed explanation of the current account

If **inflation** is increasing in a country at a greater rate than in the countries with which it trades, the average price of its exports will increase at a greater rate than the increase in the average price of imports. The country can buy more imports with a given quantity of its exports leading to an improvement in the terms of trade.

If inflation is increasing in a country at a lower rate than in the countries with which it trades, the average price of imports will increase at a greater rate than the average price of exports. A given quantity of exports can buy fewer imports leading to deterioration in the terms of trade. However, how the **current account** is affected by a change in the average price of exports and the average price of imports is determined by the price elasticity of demand for exports (PED X) and the price elasticity of demand for imports (PED M).

The value of PED X is a measure of the responsiveness of the quantity of exports demanded to a change in the average price of exports.

$\text{PED X} = \frac{\text{percentage change in the quantity of exports demanded}}{\text{percentage change in the average price of exports}}$

PED X is inelastic when the percentage change in the average price of exports > the percentage change in the quantity of exports demanded.

When PED X is inelastic a percentage increase in the average price of exports is greater than the percentage fall in quantity demanded. Therefore an increase in the average price of exports (an improvement in the terms of trade) will lead to an increase in export revenue and an improvement in the current account balance. A fall in the average price of exports (a deterioration in the terms of trade) leads to a fall in export revenue because the percentage fall in price is greater than the percentage increase in quantity of exports demanded. In this case a fall in price leads to deterioration in the current account balance.

PED X is elastic when the percentage change in the quantity of exports demanded is greater than the percentage change in the average price of exports. When the average price of exports increases (an improvement in the terms of trade) the quantity demanded for them falls at a greater rate leading to a fall in export revenue and deterioration in the current account balance. When the average price of exports falls (deterioration in the terms of trade) the quantity of exports demanded increases at a greater rate, leading to an increase in export revenue and an improvement in the current account balance.

PED M is a measure of the responsiveness of the quantity of imports demanded to a change in the average-price of imports.

$\text{PED M} = \frac{\text{percentage change in the quantity of imports demanded}}{\text{percentage change in the average price of imports}}$
When PED M is inelastic a percentage increase in the average price of imports is greater than the percentage fall in quantity demanded. Therefore, an increase in the average price of imports (deterioration in the terms of trade) will lead to an increase in the expenditure on imports and deterioration in the current account balance. However, a fall in the average price of imports (an improvement in the terms of trade) will lead to a fall in import expenditure and an improvement in the current account balance.

When PED M is elastic a percentage increase in the average price of imports is less than the fall in quantity demanded. An increase in the average price of imports (a deterioration in the terms of trade) leads to a fall in import expenditure and an improvement in the current account balance. When PED is elastic, a fall in average import prices (an improvement in the terms of trade) leads to an increase in import expenditure and deterioration in the current account balance.

Explain the effects of short-term fluctuations and long-term deterioration in the terms of trade of LDCs (HL)

Many LDCs earn most of their export revenue from the sale of primary goods and less export revenue from manufactured goods. Primary goods are the raw materials used to produce other goods, such as agricultural goods, metals, and minerals.

Explain why, in the long term, the price of primary goods has fallen

Why has demand for primary goods increased?

Relatively fast economic growth in countries such as China and India, and an increasing world population, has led to an increase in demand for many primary goods – causing their prices to rise in the short term and increasing the revenue earned by those countries that export them. Earning more export revenue could lead to an increase in the number of goods that can be consumed, thereby increasing **consumer welfare**. Increases in the price of primary goods also give LDCs an opportunity to reduce international debt.

Why has the supply of primary goods increased?

World economic growth and population growth increases the demand for primary goods but there are supply-side factors that have pushed the long-term prices down.

Advances in technology have increased **productivity**, leading to increases in the world supply of primary goods. More efficient mining techniques have led to an increase in the world supply of minerals and the use of advanced **capital** in farming and the use of more effective fertilizers has led to an increase in the world supply of agricultural goods. In the long term, supply is increasing at a faster rate than the increase in demand putting downward pressure on prices.

Many developed countries protect their farming industries through the provision of **subsidies** giving farmers the incentive to increase supply, thereby causing a **surplus** of agricultural goods which increases the world supply and pushes the price down. If the average price of exports of LDCs is falling at a greater rate than the average price of imports, a given quantity of exports can buy fewer imports leading to deterioration in the terms of trade.

Model sentence: Demand for primary goods is increasing but supply increases at a greater rate leading to a long-term fall in the average price of exports of LDCs and a deterioration in their terms of trade.

What is the effect of income elasticity of demand on the demand for primary goods and the demand for manufactured goods and services (YED)? (HL)

- YED measures the responsiveness of demand for a good to a change in income.
- $YED = \frac{\text{percentage change in demand}}{\text{percentage change in income}}$
- When the percentage change in demand > the percentage change in income YED is elastic and $YED > 1$.
- When the percentage change in income > the percentage change in demand YED is inelastic and $YED < 1$.

Real income in the developed world has risen. But YED for primary goods is inelastic. This means that incomes have increased at a greater rate than increases in demand. However, YED for manufactured goods and services is elastic. This means that demand for them increases at a greater rate than the rate of increase in income. Therefore, as world income rises the demand for manufactured goods and services increases at a greater rate than the demand for primary goods.

What is the effect on the terms of trade of long-term increases in supply and of YED? (HL)

Increases in world income and population lead to an increase in demand for primary goods. However, supply over time is increasing at a greater rate than demand pushing down the price of primary goods in the long term.

YED is relatively more elastic for manufactured goods and services than for primary goods. Therefore, as incomes rise throughout the world the demand for manufactured goods and services produced increases at a greater rate than the demand for primary goods.

Prices of manufactured goods and services may fall over time as productivity increases but the price of primary goods will fall at a greater rate.

Subject vocabulary

consumer welfare a measure of the benefit obtained from the consumption of goods

productivity the quantity of output per unit of input

capital (goods) manufactured goods that are used in the production of other goods

subsidies payments made by government to firms per unit of output

surplus occurs when quantity supplied is greater than quantity demanded, another term for excess supply

real income income after taking into account the effects of inflation on purchasing power

Subject vocabulary

primary goods a good that has not been processed and is in a raw state (e.g. fruit/wheat)

current account deficit occurs when the amount of money flowing out of a country from the trade in goods and services, investment income, and transfers is greater than the amount flowing in

negative externalities occur when the production or consumption of a good creates costs that must be paid by third parties. The existence of negative externalities means that social cost is greater than private cost.

Glossary

degradation becoming worse in condition

Because of these differences in the conditions of supply and YED in the long term, the rate at which the price of **primary goods**, produced and exported by LDCs, falls is greater than the rate at which manufactured goods and services, produced and exported by developed countries, may fall.

Over time, developed countries can buy an increasing quantity of imports from LDCs with a given quantity of their exports leading to an improvement in the terms of trade of developed countries in the long term.

Over time LDCs can buy increasingly fewer imports from developed countries with a given quantity of their exports leading to a deterioration in the terms of trade of LDCs in the long term.

How might the current account of LDCs be affected by the PED of imports and exports?

The PED of primary goods is inelastic. The percentage increase in demand is less than the percentage fall in price. As the average price of primary goods falls in the long term, quantity demanded increases but at a lower rate.

Export revenue from primary goods = average price of primary goods \times quantity sold. Therefore, when the average price of primary goods falls export revenue earned falls.

Many LDCs produce relatively few manufactured goods. In order to reduce their dependence on the revenue from primary goods LDCs must move away from primary production to secondary production. Many LDCs must import goods needed to produce other goods (capital) because they are not produced domestically. The PED of capital goods is inelastic and therefore as their price increases due to increases in demand expenditure on them increases. Expenditure on imports increases.

A fall in export revenue and an increase in import expenditure lead to a deterioration of the current account balance.

What are the consequences of the deterioration in the terms of trade for LDCs? (HL)

When the average price of an LDC's exports falls relative to the average price of its imports the terms of trade deteriorates. LDCs can buy fewer imports with a given quantity of exports leading to deterioration in the terms of trade. They have to sell more exports in order to buy a given quantity of imports. This puts pressure on them to increase supply. Increasing supply reduces price further, thereby increasing consumption of primary goods. However, because PED for exports is inelastic, the fall in price leads to a further fall in export revenue, possibly leading to an increase in the **current account deficit**.

LDCs' attempts to increase the supply of primary goods increase **negative externalities**. For example, land used for growing crops is over used, leading to soil **degradation**, thereby reducing future potential levels of output, income, and export revenues. Deforestation occurs when forests are cut down so that land can be used for farming. Deforestation has negative impacts on the environment. Many species of animals lose their habitats and become extinct and most scientists believe deforestation leads to climate change.

Many LDCs have large international debts. As export revenue falls countries find it very difficult to pay the interest on the debt. This leads to further borrowing and once again supply of primary goods is increased to try to increase export revenue.

Test your understanding of this unit by answering the following questions

- Explain the factors that determine the terms of trade of LDCs exporting primary goods.
- Using the concept of PED, explain why an increase in the average prices of primary goods leads to a deterioration in the current account balance of countries that export primary goods.
- Using the concept of income elasticity of demand, explain the effect of increases in world income on the demand for primary goods.